

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the following remarks.

Claims 8-12 stand rejected under 35 USC §103(a) as unpatentable over Rutt (EP 0 447 080) in view of Claus. (US 7,133,067). Claim 13 stands rejected under 35 USC §103(a) as unpatentable over Rutt in view of Claus and Holder (US 4,637,571). Claim 14 stands rejected under 35 USC §103(a) as unpatentable over Rutt in view of Claus and Ahlstrom (US 4,796,834). The Applicants respectfully traverse these rejections based on the points set forth below.

The instant invention is directed to a system and method for forming successive images of a scene captured by a rotating flying body. According to this method, the flying body's rotation is initiated at its launch and several pictures are captured during each revolution of rotation of the flying body. The captured pictures are geometrically transformed to have the same relative position with respect to the contour of the captured scene. Thereafter, the transformed pictures are displayed. The claimed invention advantageously enables capturing images of a target with a rotating body, such as a spinning missile, and transforming the captured images for display such that the transformed images display with the same orientation (see specification page 1, line 34, through page 2, line 6). Moreover, the claimed invention exclusively concerns a rotating body, such as a rotating missile, and avoids a roll-stabilized platform which would be required for a rotating camera (see specification, pages 1 and 2). (It should be noted that references herein to the specification and drawings are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments.)

Rutt, on the other hand, describes an aerial reconnaissance device including a conventional mortar ammunition, which is fired above a zone to be observed, and then slowly descends over the zone suspended by a parachute or balloon. As is well understood, a conventional mortar is a gun with a smooth bore (consequently, unable to rotate the ammunition) which fires mortar ammunitions equipped with stabilizing winglets for avoiding rotation. Therefore, during the ammunition's (e.g. aerial reconnaissance) curved trajectory between the mortar and the zone to be monitored, the aerial reconnaissance device of Rutt cannot be rotating. To the contrary, it is stabilized against spinning. Moreover, during the reconnaissance mission, the aerial reconnaissance device of Rutt is suspended by a parachute or balloon, such that it cannot rotate about its axis. Hence, despite the Office Action's assertions to the contrary, at no instant of its use can Rutt's aerial reconnaissance rotate. Indeed, Figure 2 illustrates this point. While Rutt discloses that signals from a telemetry package 8 related to the orientation of the reconnaissance device, particularly if it is being deliberately spun, may be used in a command module 15 to produce a steady image of constant orientation (see Rutt page 2 line 56, through page 3, line 4), Rutt fails to disclose that successive images of a scene are taken during each revolution of the rotation of the flying body, such that several pictures are taken that correspond to a predetermined angular position, as required by the instant claimed invention.

For example, in the instant claimed invention, as the flying body rotates, several (i.e. multiple) pictures are taken during each rotation. As described in the specification, pictures may be taken at 90°, 180°, and 270° degrees (in addition to a reference picture at 0°) during a single rotation. There is, however, no disclosure in Rutt that multiple pictures are taken by the reconnaissance device during each rotation. In fact, Rutt only states that "a short duration

recorder" is used "to enable scenes observed by the reconnaissance device to be reviewed if desired." That is, scenes captured by camera 7 may be recorded in a short duration recorder for later viewing of, for example, a steady image of constant orientation. However, this does not require, nor is there any disclosure, that multiple pictures be taken during each rotation. Moreover, even if multiple pictures were taken, there is no disclosure in Rutt that several pictures are taken which correspond to a predetermined angular position. These *predetermined* angular positions of the present claimed invention, as alluded to above, may be for example 90°, 180°, and 270° of rotation about the longitudinal axis.

When the teachings of Claus are considered with those of Rutt, this still does not cure the deficiencies of Rutt and would not achieve the present claimed subject matter. Claus is directed to a high-precision digital image stabilization of an image recording with a CCD sensor used in a moving flying carrier. Specifically, a correction of the effects of roll and pitch is accomplished using sensors, thereby eliminating unwanted movement influences of flight movements of the carrier on the image quality of the image recorded by the CCD sensor (see, Summary of the Invention, col. 1, lines 50-67). There is, however, no disclosure of the flying carrier rotating about its longitudinal axis. Hence, while the stabilizer in Claus may work well for pitch and roll as experienced in a typical flying carrier, such as an airplane, it would not be able to stabilize the full rotational effects caused by a flying body that rotates about its longitudinal axis, as required by the instant claimed invention. Hence, not only does Claus fail to disclose the features of the Applicants' claims, use of the stabilizer disclosed in Claus, in combination with the system and method of Rutt, would render the combination inoperable.

Thus, it is submitted that the teachings of Rutt and Claus, considered individually or in combination, do not render obvious the subject matter defined by claim 8. Claim 8 is therefore patentable.

Independent claim 9 similarly recites the above-mentioned subject matter distinguishing method claim 8 from the applied references, but with respect to an apparatus. Claim 9 is therefore deemed patentable. Claims 10-14, depending directly or indirectly from claim 9, are similarly patentable. Claim 15 has not been rejected in the Office Action, and is therefore patentable.

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

/James Edward Ledbetter/

Date: July 31, 2009
JEL/KRS/att

James E. Ledbetter
Registration No. 28,732

Attorney Docket No. 073070-06103
Dickinson Wright PLLC
1875 Eye Street, NW, Suite 1200
Washington, DC 20006
Telephone: (202) 659-6966
Facsimile: (202) 659-1559
DC 139182v1